Human Social Cultural and Behavioral (HSCB) Modeling Challenges

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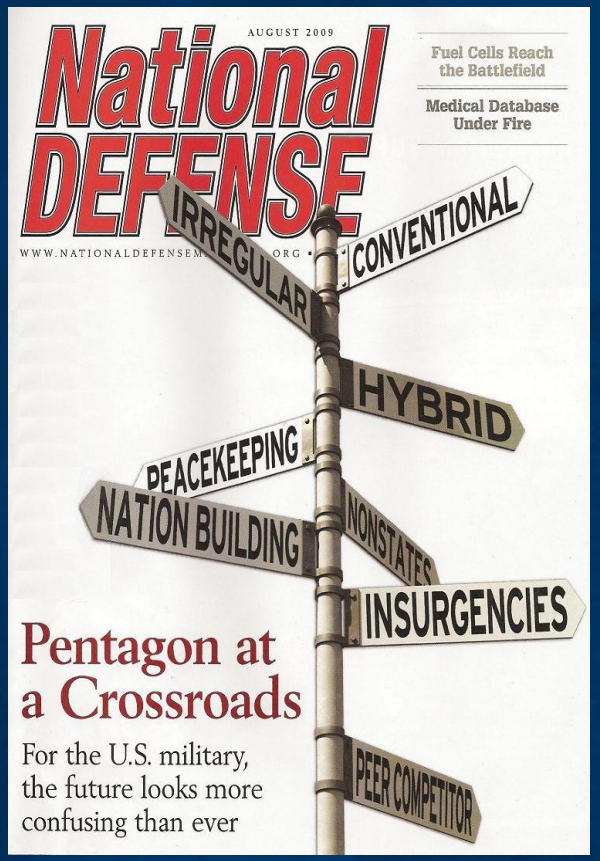
Structure of the Presentation

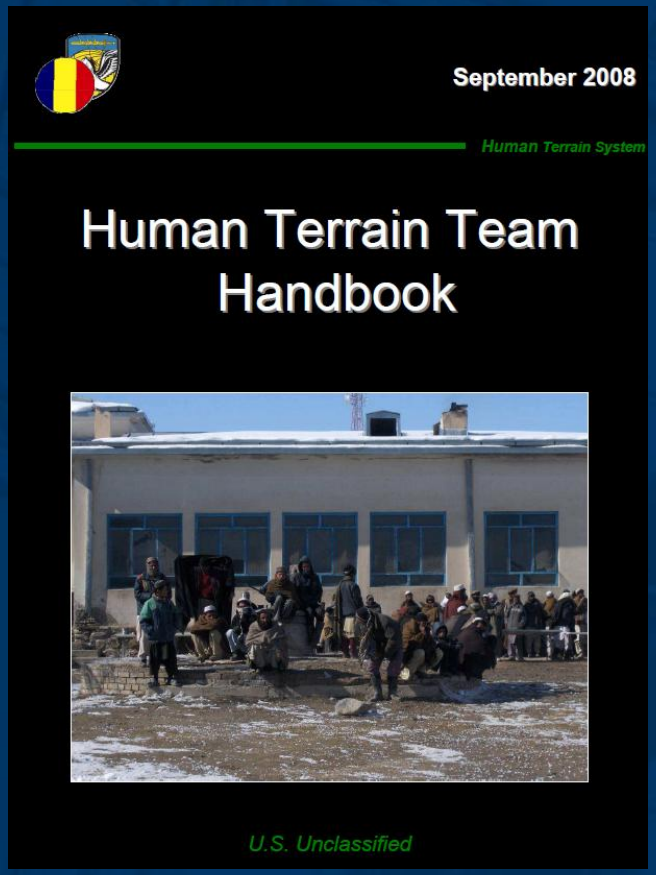
- Introduction to Human, Social, Cultural, Behavioral Modeling Challenges
- Overview Recent Activities of NATO
- Overview Recent Activities of US JFCOM
- Overview Current Related Activities
  - OSD Human Social Culture Behavioral Modeling Program
  - LinkedIn HSCB Group
  - Simulation Interoperability Standards Organization (SISO)
  - Winter Simulation Conference

Emerging Challenges from New Operational Tasks

- Focus of traditional combat M&S
  - Observing and sensing (look)
  - Effecting (shot)
  - Changing location (move)
  - Exchanging information (communicate)
  - Command and control (decide)
- The spectrum of operational tasks has been broadened significantly in the recent years
  - Non-Article 5 operations
  - Operations other than War
  - Civil Military Operations



Human Terrain



- Identify, document, and catalog data
  - Field research
  - Local unit reports
  - News/Internet
  - External agency reports
  - Academic reports
- In non-kinetic roles, the civil population becomes the "target" for effects
  - Social, cultural, and other anthropological aspects become important
  - Human and social science become important

Why HSCB Modeling

- Categories for military operations in the post Cold War era
  - Political Military Economic Social Information Infrastructure (PMESII)
- Spectrum of options to choose from fro decision makers
  - Diplomatic, Information Operations, Military, Economic (DIME)
- Emerging Challenges for M&S
  - Human, Social, Cultural, and Behavioral (HSCB) Modeling
- Several research activities are currently ongoing to evaluate *(Tracks on these topics in SCS09, CCRTS09, WSC09, WSC10, and more)*
  - What needs to be modeled?
  - How new concepts can be modeled (or are modeled in other communities)?
  - How such models can be integrated/federated?

Challenge: How to use M&S?

Exploration

- Understanding the problem
- Evaluated possible connections
- Gaining insight
- Influence and interactions of key parameters
- Emerging behaviors

Problem Solving

- Simulation as computational activity
- Known and verifiable connections
- Training and decision support
- Representing knowledge as an executable simulation

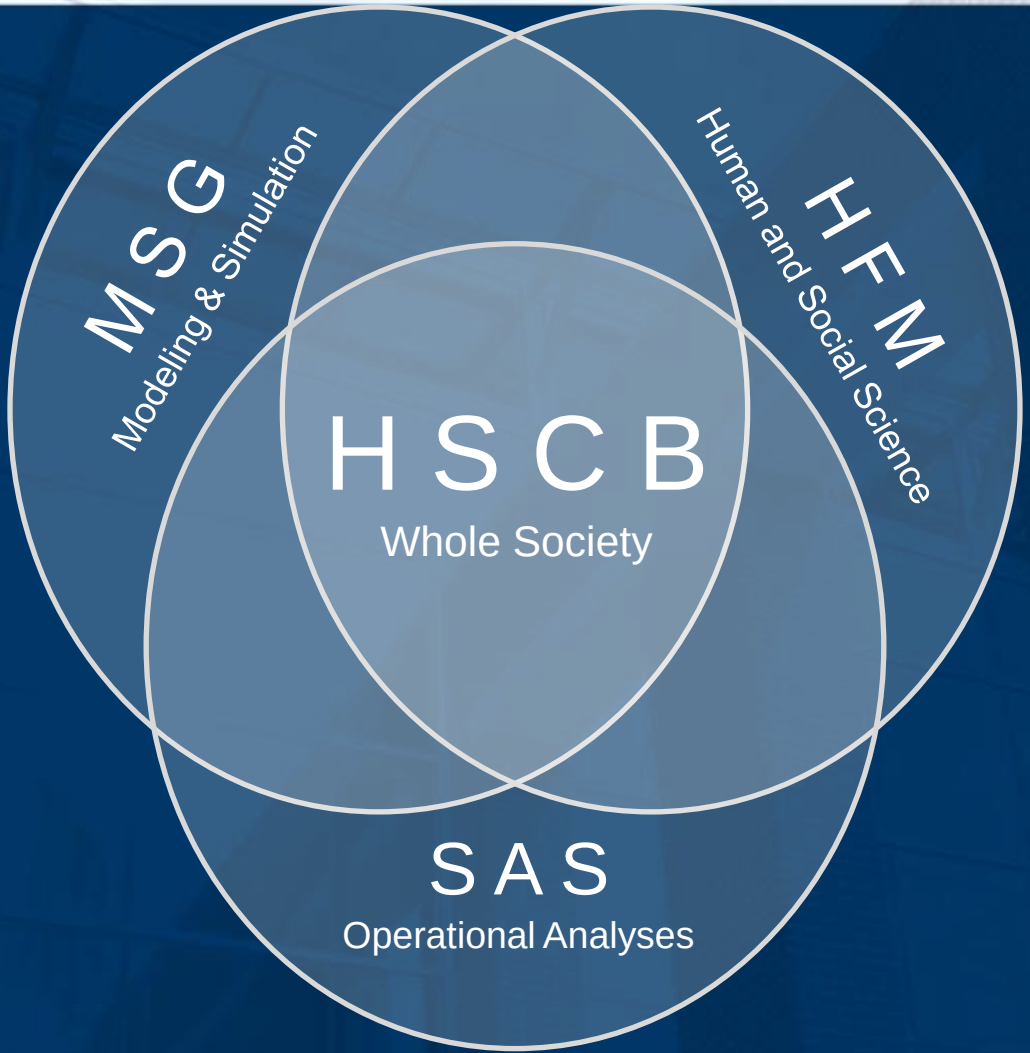
Activities in NATO

- Research and Technology Organization (RTO)
  - Research and Technology Board (RTB, leadership)
  - Research and Technology Agency (RTA, administration)
- Supporting the Military Committee (MC)
- Supporting the Conference of National Armament Directors (CNAD)
- Six Panels and one Group
  - National technical experts on special topics
  - Exploratory teams and task groups
  - Symposia, workshops, education

NATO Panels and Groups

- ***System Analysis & Studies*** **(SAS)** conducts studies and analyses of an operational and technological nature and promote the exchange and development of methods and tools for operational analysis as applied to defense problems.
- ***Human Factors & Medicine (HFM)*** provides the science and technology base for optimizing health, human protection, well being and performance of the human in operational environments with consideration of affordability.
- ***Information Systems Technology*** **(IST)** identifies and review areas of research of common interest and recommends the establishment of activities in these areas.
- ***Applied Vehicle Technology*** **(AVT)** improves the performance, affordability, and safety of vehicles.
- ***Systems Concepts & Integration*** **(SCI)** advances knowledge concerning advanced systems, concepts, integration, engineering techniques and technologies across the spectrum of platforms and operating environments to assure cost-effective mission area capabilities.
- ***Sensors & Electronics Technology*** **(SET)** advances technology in electronics and passive/active sensors and enhances sensor capabilities through multi-sensor integration/fusion in order to improve the operating capability and contribute to fulfilling strategic military results.
- **Modeling and Simulation Group (MSG)** promotes co-operation among Alliance bodies, NATO Member Nations and PfP Nations to maximize the effective utilization of M&S.

VMASC


MSG
Modeling & Simulation
HFM
Human and Social Science
HSCB
Whole Society
SAS
Operational Analyses

Examples of Modeling and Simulation Task Groups

- RTO-MP-MSG-069 - Current Uses of M&S Covering Support to Operations, Human Behavior Representation, Irregular Warfare, Defense against Terrorism and Coalition Tactical Force Integration
  - Workshop conducted by the NATO M&S Group
- MSG-082 - Modeling and Simulation of Complex Systems in Public Safety and Military Operations
  - Workshop to be conducted in Canada in May 2010

Examples of Human Factors and Medicine Panel Task Groups

- HFM-185: *Processes for Assessing Outcomes of Multinational Missions*
  - Integrate the Measuring Progress in Conflict Environments (MPICE) capability into a common NATO assessment framework
- HFM-160/HFM-183: *Measurement of Effectiveness of Psychological Operations as Part of Information Operations*
  - developed a framework and guidelines in support of structuring thinking about psychological operations (including metrics and apps.)
- HFM-172: *Social Sciences Support to Military Personnel Engaged in Counter Insurgency and Counter Terrorism Operations*
  - building and maintaining resilient militaries, reducing radicalization, and building civilian community
- HFM-163: *Improving the Organizational Effectiveness of Coalition Operations*
  - potential models and tools for understanding, explanation and measuring different aspects of effective adaptation and cooperation in multinational coalitions

Analytical Tools for Irregular Warfare (SAS-071)

- Insurgency/ Counterinsurgency (COIN)
- Combating Terrorism
- Stabilization, security, transition, and reconstruction operations (SSTRO)
- Unconventional warfare (UW)
- Foreign internal defense (FID)
- Strategic communications
- Psychological operations (PSYOP)
- Information operations (IO)
- Civil-military operations (CMO)
- Intelligence and counterintelligence activities
- Transnational criminal activities, including drug-trafficking, illicit arms dealing, and
- illegal financial transactions, that support or sustain IW
- Law enforcement activities focused on countering irregular adversaries

Recommendations SAS-071

- RTO should sponsor a joint technical team to create a plan to collect ***Data from NATO and national operations*** in Afghanistan and make the data available to member nations to support tool building and analysis
- RTO should sponsor a joint technical team to develop a plan that would create a group to **provide joint support and training** to analysts deploying to Afghanistan.
- RTO should sponsor a ***Social Science Community of Interest*** to foster the comparisons of social science theories and data
- RTO should sponsor an ***IW M&S Community of Interest*** to foster the sharing of IW M&S techniques, data and lessons learned
- RTO should sponsor a joint research team to develop an ***IW framework*** that could be used to assess M&S and establish requirements
- RTO should sponsor a joint research team to develop a *Code of Best* ***Practices for IW M&S and data V&V*** similar to the Code of Best Practice described in section 2.1 of this paper
- Recommend that Allied Joint Operational Doctrine (AJOD) Working Group and/or AAP-6 Working Group sponsor a joint technical team to ***Create a Lexicon*** for IW-related activities for use by all the member countries

Applicable Models and Methods in Support of Current NATO Operations (SAS-074)

- Current NATO operations, such as the engagement in Afghanistan, inherently require an understanding and anticipation of human, social, and cultural factors
- The utilization of human and social-science based theories, models, and methods is required
- One of the main advantages of NATO is that knowledge in specialist areas is already available in the nations
  - knowledge can be derived from their experiences or their cultural heritage
  - personality assessment, social simulation, cultural awareness, social network analysis, etc
- Expected results for SAS-074 are the identification of gaps on the operational as well as on the theoretical side and recommendations on how to close these gaps
- The ultimate aim is to educate and better position armed forces to address psycho-social factors within current operations

Recent US JFCOM Activities

- US JFOM Experimentation Directorate J9 supported
  - SAS-071 and SAS-074 activities
  - Integration of Psycho-Social Effects and Irregular Warfare
  - Supporting Community-of –Interest Development
    - Conceptual support, CMap
    - virtual world integration; 2nd life
    - Use of advanced visualization tools; The Brain
  - Limited Objective Experiments

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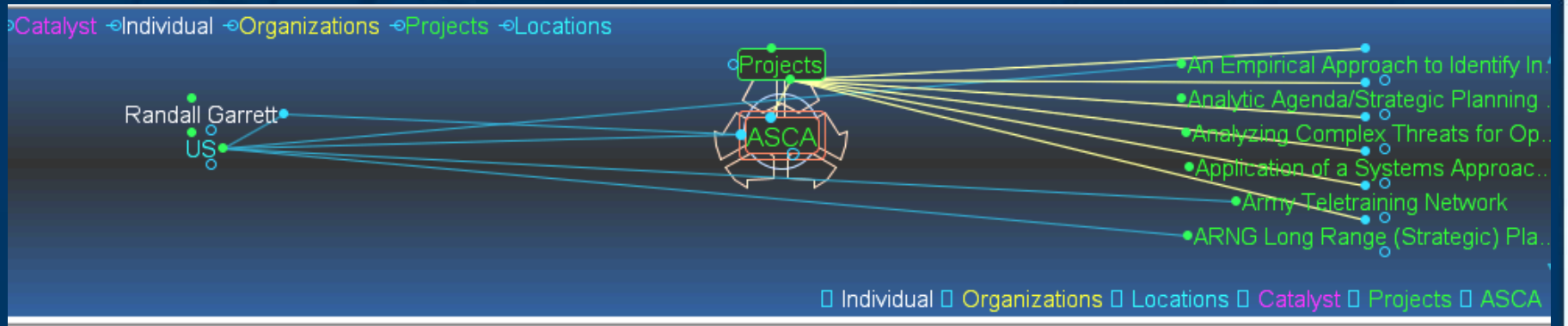


Project Name
ASCA

Start Date
Sep / 2008

End Date
Jul / UNDETERMINED

Primary Project Type
Concept/Theory

Your Primary Project Role
Concept developer

Country Location
United States of America

Geographical Region Location
Suffolk, VA

Primary Support Organization
U.S. Joint Forces Command [USJFCOM]

Project Website URL
https://primus.casos.cs.cmu.edu/catweb/

VMASC

CMap Presentation to SAS-074 Members using a Virtual Collaborative Environment

OSD HSCB Modeling Program

- "Accelerate Delivery of Technical Capabilities to win the Current Fight"
- Technology transfer to better support the troops, in particular in Afghanistan and Iraq
- Coordinate efforts using Small Business Innovation Research
- Arose from the "emerging understanding that insurgencies and regular conflict areas are more difficult to analyze than the more traditional, conventional warfare-based scenarios" (Robert E. Foster, PhD)
- Invited subject matter experts building the core of the HSCB work
- HSCB Program Newsletter published quarterly

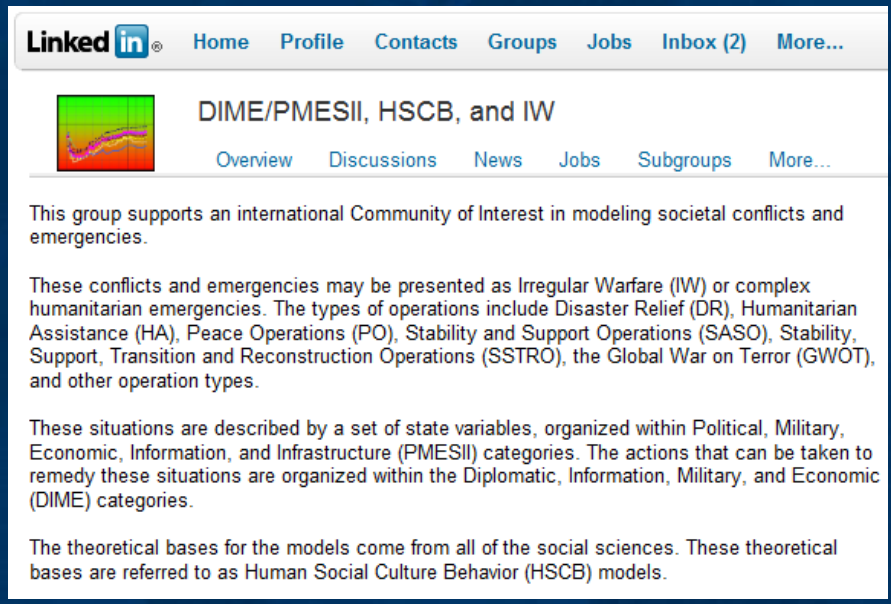
Selected Topics sponsored by HSCB Modeling

- A Cultural Architecture Generator for Immersion Training in Virtual Environments and Using Serious Games for Socio-Cultural Scenario Training
- Hybrid & Multi-Model Computational Techniques for HSCB Applications for Cross and Multi Cultural Decision Making
- Using Computational Models to identify and track underlying dynamics based on historical and political observations
- Applying Cognitive Systems Engineering principles in tool sets applicable in operational environments
- Capability to understand the social and cultural terrain and the various dimensions of human behavior within those terrains across the spectrum, from adversaries to joint forces including governmental and non-governmental organizations

LinkedIn

- LinkedIn is a networking environment
- Provides support for online resumes, etc.
- Groups for Discussion and Information Sharing can easily be created and managed

- Website: http://home.comcast.net/~dshartley3/DIMEPMESIIGroup/DPGroup.htm



Winter Simulation Conference 2010

- Baltimore, MD, December 5-8, 2010
- Special Session on Methodological Approaches for Human, Social, Cultural, and Behavioral Modeling Challenges (Modeling Methodology)
- Invited papers by
  - Dean Hartley III, Hartley Consulting
  - Sue Numrich, IDA
  - Gnana K Bharathy, UPenn
- Panel Discussion with
  - Paul K. Davis, RAND -- Harald Schaub, IABG
  - Wim Huiskamp, TNO -- Gary Klein, MITRE
  - Jim Wall, TAMU

Literature

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